

# HURRICANE JOAQUIN / NOREASTER

## City Council Presentation

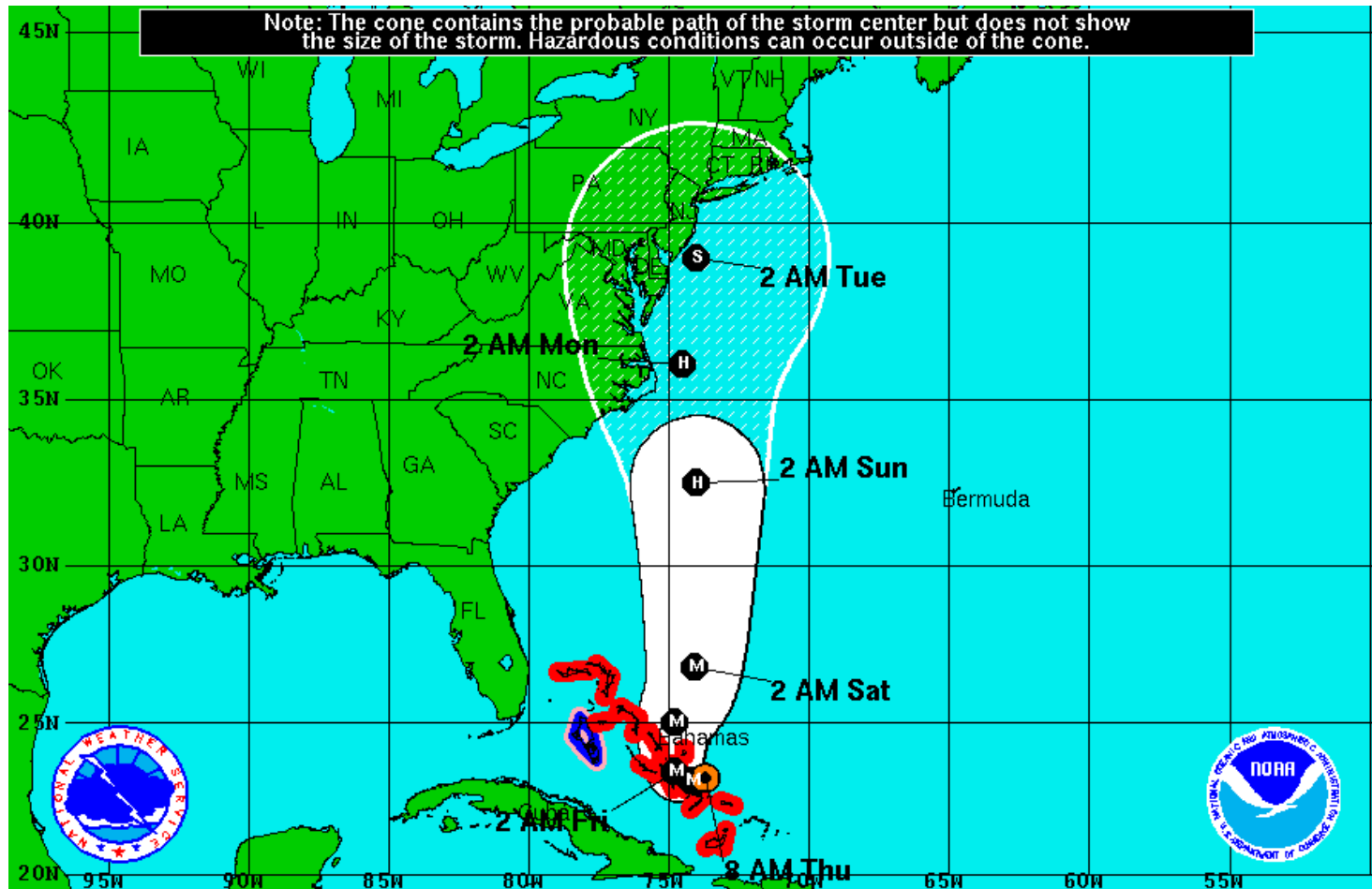
**TEAM NORFOLK**



October 13, 2015



# Forecasted Path and Timeline



## Hurricane Joaquin

Thursday October 1, 2015

8 AM EDT Intermediate Advisory 14A

NWS National Hurricane Center

## Current Information:

Center Location 23.2 N 73.7 W

Max Sustained Wind 120 mph

Movement WSW at 5 mph

## Forecast Positions:

● Tropical Cyclone ○ Post-Tropical

Sustained Winds: D < 39 mph

S 39-73 mph H 74-110 mph M > 110mph

## Potential Track Area:

Day 1-3 Day 4-5

## Watches:

Hurricane Trop. Storm

## Warnings:

Hurricane Trop. Storm

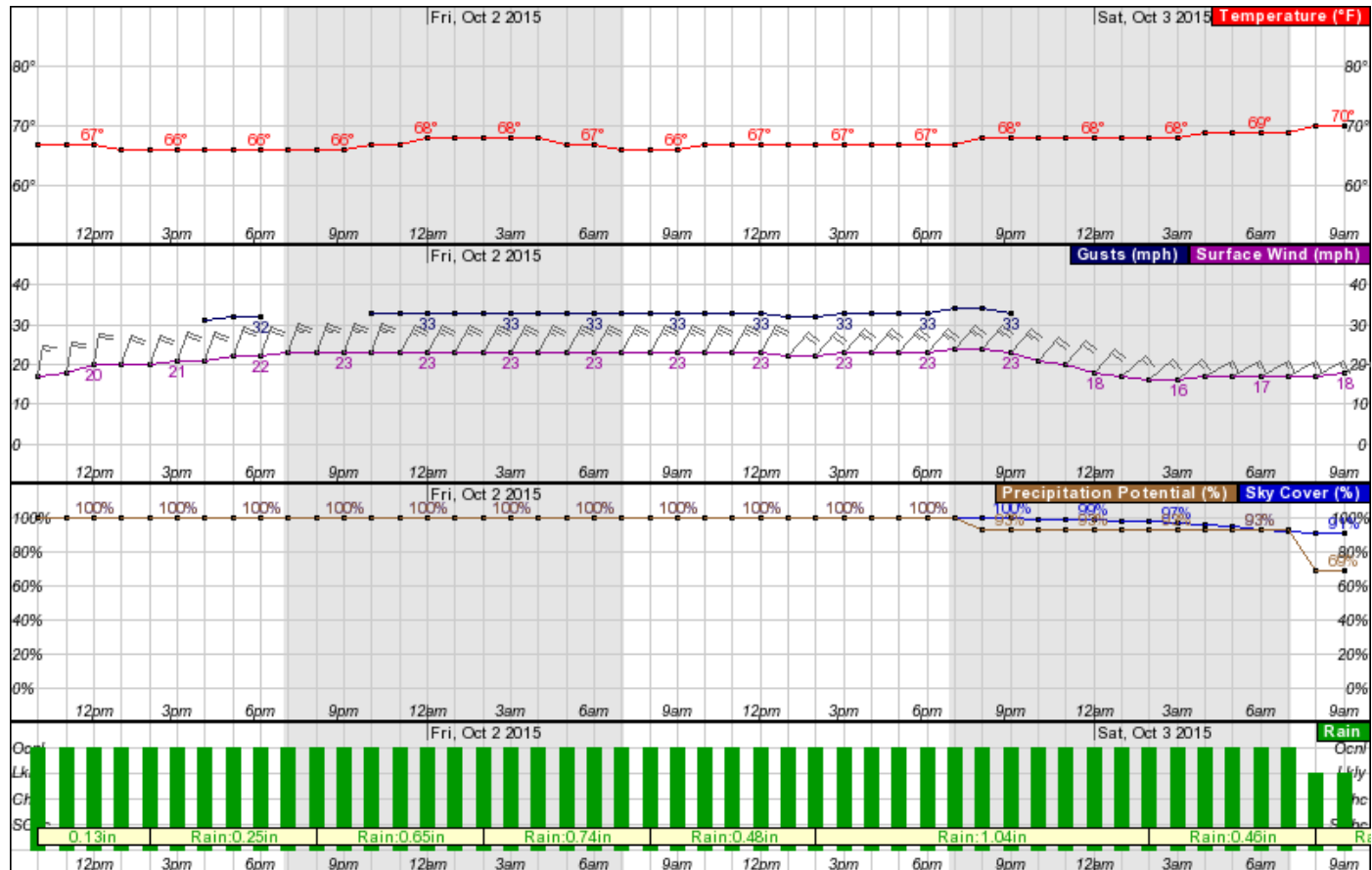
# Incident Summary

- **State Declaration: 9/30/15 @ 5:04pm**
- **Local Declaration: 9/30/15 @ 5:04pm**
  - *Schools Closes / City Modified 10/5/15*
  - *Declaration Rescinded 10/5/15 @ 8pm*
- **EOC Activation –VIRTUAL**
  - *Email Updates / EOC Briefing Conference Calls*
- **JIC Activation – VIRTUAL**
- **Power Outages Minimal (~110)**



# Forecasted Arrival of Winds, Rain, etc.

## *Friday to Saturday*



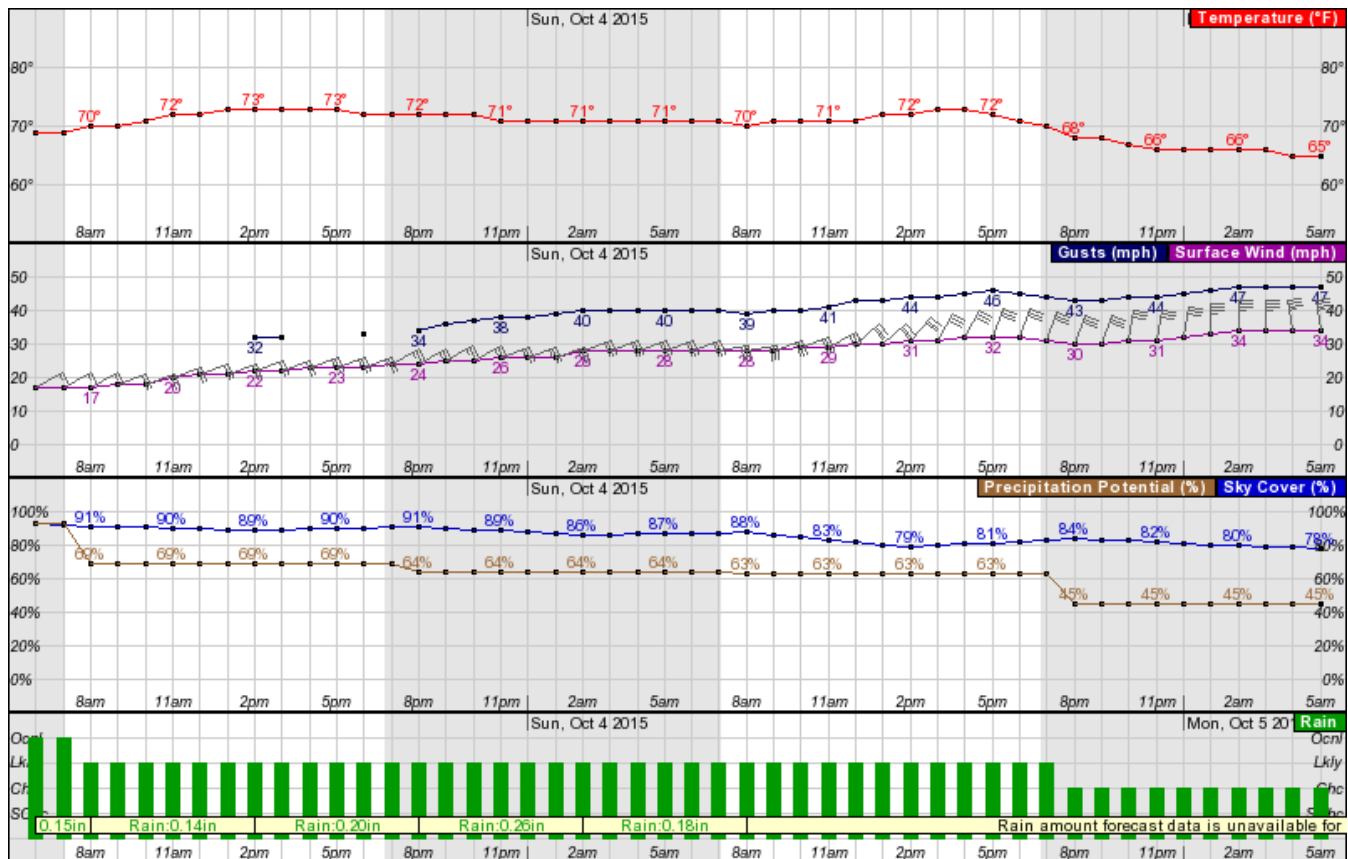
Winds  
/  
Gusts

Rain

# Forecasted Arrival of Winds, Rain, etc.

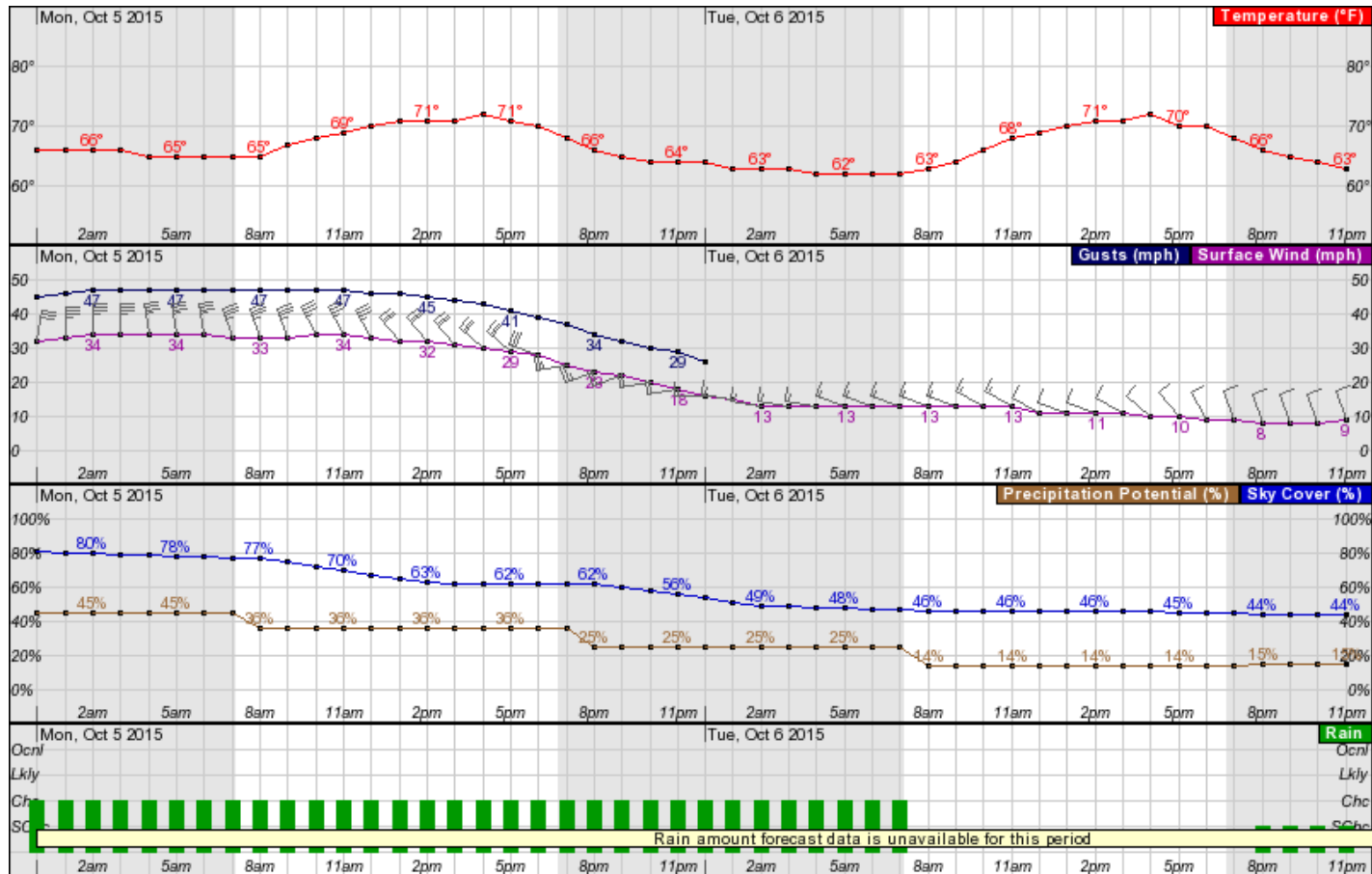
## *Saturday – Sunday*

### *Joaquin Impacts Late Sat into Sunday*



# Forecasted Arrival of Winds, Rain, etc.

## *Monday*



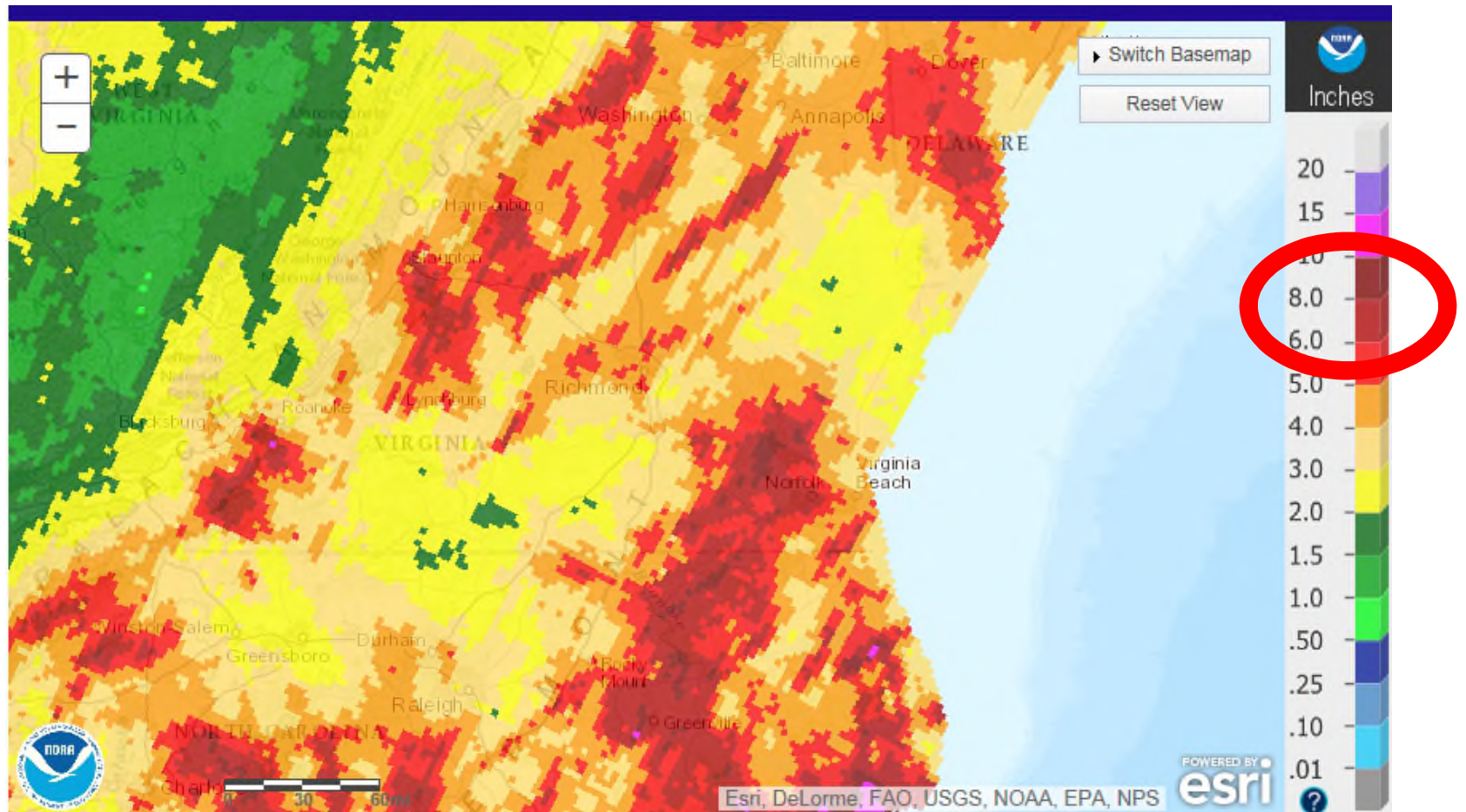
Winds /  
Gusts →

Rain →

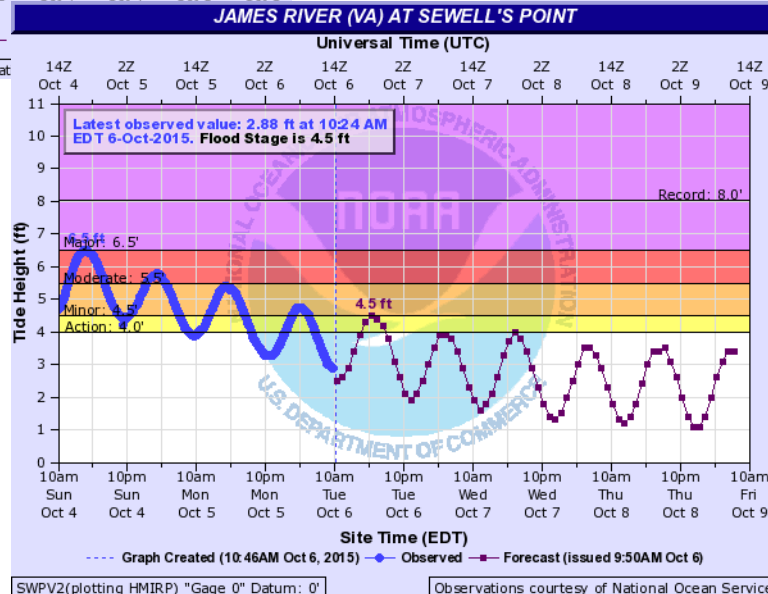
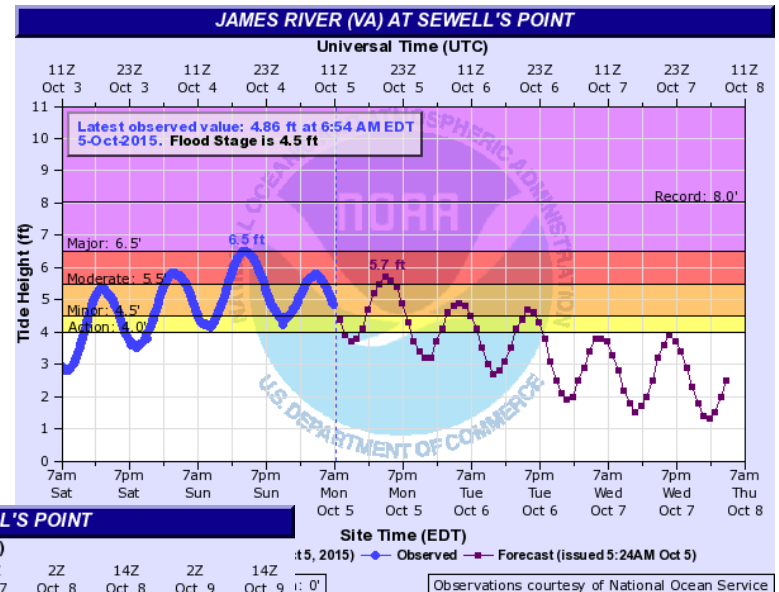
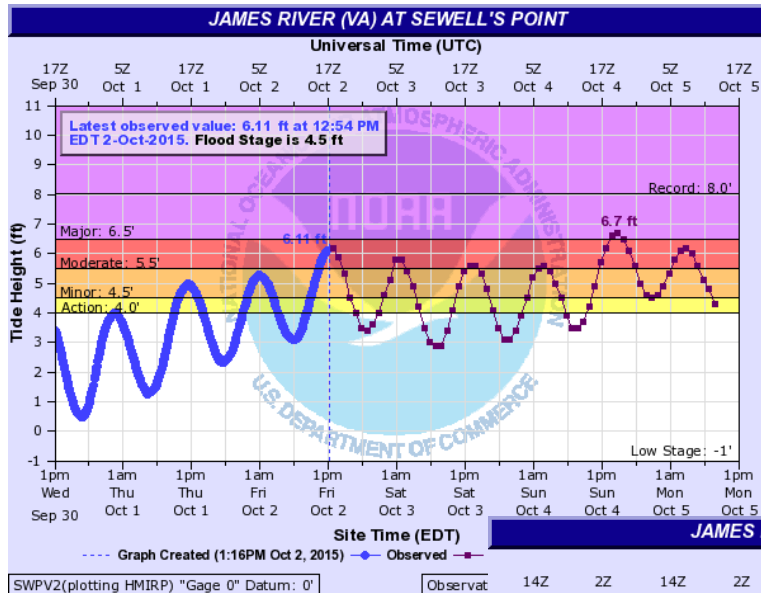


# Observed Rainfall Amount

## *Sept. 29 – Oct. 6*



# Observed High Tides







# TITAN

(Tidal Inundation Tracking Application for Norfolk)

Flood Layer (NAVD88): Elev 5.5 ft

LEGEND:

Sewells Point Tide Gauge

Transportation

Major Roads

FLOOD LAYER (NAVD88):

Water Depth for Elev 5.5 ft

0.0 - 0.5  
0.5 - 1.0  
1.0 - 1.5  
1.5 - 2.0  
2.0 - 2.5  
2.5 - 3.0  
3.0 - 3.5  
3.5 - 4.0  
4.0 - 4.5  
4.5 - 5.0  
5.0 - 5.5

Scale  
1 2mi



Sewells Point Gauge

Tide Projections

Current Elevation

# Top High Water Events – Sewells Point

NOS CO-OPS Data

Date	Storm Type	Above MLLW (1983-2001)
August 23, 1933	Hurricane (unnamed)	8.02 feet
September 18, 2003	Hurricane Isabel	7.89 feet
November 12, 2009	Nor'easter	7.75 feet
August 27, 2011	Hurricane Irene	7.56 feet
March 7, 1962	Ash Wednesday Storm	7.22 feet
September 18, 1936	Hurricane (unnamed)	6.72 feet
November 22, 2006	Thanksgiving Nor'easter	6.63 feet
February 5, 1998	Twin Nor'easter (#2)	6.58 feet
October 7, 2006	Columbus Day Nor'easter	6.52 feet
April 27, 1978	Nor'easter	6.41 feet
April 11, 1956	Nor'easter	6.32 feet
September 16, 1933	Hurricane (unnamed)	6.12 feet
January 28, 1998	Twin Nor'easter (#1)	6.04 feet
September 16, 1999	Hurricane Floyd	5.97 feet
September 27, 1956	Hurricane Flossy	5.92 feet
September 12, 1960	Hurricane Donna	5.92 feet



**SANDY**  
**6.85'**



**2015**  
**6.5'**



# Incident Goals & Objectives

Sheltering

Parking Safe Havens

Infrastructure

Internal / External Communications



# TITAN Analytics



1,799 users came to the site 2,354 times; application generated 4,053 web pages

Top 5 cities users came from:

Norfolk (61%)

Virginia Beach (14%)

Washington, D.C. (4%)

Chesapeake (4%)

Portsmouth (1%)



# STORM Analytics

## 232 Events reported:

Event	Total
Closed Streets	13
Damaged Building	1
Damaged Trees	12
Debris Blocking Street	3
Disabled Vehicle	1
Down Line	8
Flooded Streets	159
Traffic Sign Issue	3
Traffic Signal Issue	15
Water Line Issue	2
Other	15

STORM  
SYSTEM TO TRACK, ORGANIZE, RECORD, AND MAP

HOME SEARCH REPORTS VIEW

☒ Address  
☐ Block  
☐ Street Intersection

Enter the address for the event.  
i.e., 401 Monticello Avenue

☐ Closed street  
☐ Debris blocking street  
☐ Down telephone line  
☐ Traffic signal issue  
☐ Damaged building  
☐ Disabled vehicle  
☐ Down telephone pole  
☐ Transportation request  
☐ Damaged sidewalk/curb  
☐ Down cable line  
☐ Flooded street  
☐ Waste water line issue  
☐ Damaged underground utility  
☐ Down light pole  
☐ Flooded underpass  
☐ Water line issue  
☐ Damaged tree(s)  
☐ Down power line(s)  
☐ Traffic sign issue  
☐ Other

Internal comments: (Not visible in iView)

Copy

Public comments:

Submit

Active user: [redick] Active Incident: [Joaquin (9/29/2015)] Type: [Nor'easter]

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# Request Tracker

The image displays two screenshots of the Norfolk Virginia website. The top screenshot shows the main navigation menu with categories: GOVERNMENT, BUSINESS, SERVICES, COMMUNITY, ENJOY NORFOLK, and HOW DO I. The bottom screenshot shows the left sidebar with a list of links: Current Council Agenda, Agendas, Blogs, City Directories, Frequently Asked Questions, Jobs, Report a Problem, Request Tracker, Notify Me, My Dashboard, PPEA School Program, and 100 RESILIENT CITIES. The 'Request Tracker' link is circled in red. A red arrow points from this link to a larger, detailed view of the Request Tracker page on the right. This detailed view shows the 'RequestTracker' header, a search bar, and a list of request categories: Freedom Of Information Act (3 Forms), Norfolk Cares Assistance Center (24 Forms), and Water and Wastewater Services (7 Forms). Each category has a list of specific request types with links to their respective forms.

**Request Tracker**

Use Request Tracker to report your concerns. [Login](#) to check on existing requests.

**Freedom Of Information Act** 3 Forms

- [911 Records](#)
- [Public Safety Records](#)
- [Public Records](#)

**Norfolk Cares Assistance Center** 24 Forms

- [Abandoned Vehicle](#)
- [Accumulation of Solid Waste](#)
- [Ask a Question](#)
- [Building Construction Complaint](#)
- [Bulk Waste Collection](#)
- [City Street Tree Planting Request Form](#)
- [Curbside Trash / Improper Storage of Container](#)
- [Ditch Cleaning](#)
- [Downed or Damaged Tree](#)
- [Dumpster Complaint](#)
- [Landlord Maintenance Complaint](#)
- [Mosquito / Insect Breeding / Rodents](#)
- [Parking on the Grass](#)
- [Pothole](#)
- [Recreational / Commercial Vehicle Parked in Residential Area](#)
- [Report a Complaint or Concern](#)
- [Request Additional Waste Container / Container Repair](#)
- [Roadway/Sidewalk Right-of-Way Concern](#)
- [Sidewalk Repair](#)
- [Storm Water Service Request](#)
- [Street Light Repair](#)
- [Tall Grass](#)
- [Traffic Sign Service Request](#)
- [Traffic Signal Service Request](#)

**Water and Wastewater Services** 7 Forms

- [Inquire About a Bill](#)
- [Report a Leaking Water Main/Hydrant](#)
- [Report a Sanitary Sewer Concern](#)
- [Report Low Water Pressure](#)
- [Request a Presentation](#)
- [Request Account Payoff Information](#)
- [Request Change of Billing Address](#)

<http://www.norfolk.gov/requesttracker.aspx>





# IMPACT Analytics

Measurement	Data
Total Number of Calls Answered	2,032
Average Speed of Answer	0:10 (10 seconds)
Average Call Duration	2:00 (2 minutes)
Number of Abandoned Calls	42
Average Wait Time	1:11
Total Number of Service Requests Taken	765

## Top Informational Calls

1,267 Entries

**47 Entries Into  
STORM**

Will Street Swept be Swept Today?
City Garage Parking for Norfolk Residents During Hurricane
Will Trash Be Picked up Friday?
When Will Trash Re-Collection Occur? <b>MOST FREQUENTLY ASKED QUESTION</b>
What Times Will Parking Garages Open?
Is the Norfolk Transfer Station Open?
Road Closure Inquiry
Shelter Availability for the Homeless
Parents of ODU Students inquiring about area flooding
Storm Surges Time Inquiry
Is Household Hazardous Waste Open Today?
Cruise Parking
What Do We Do With Fallen Limbs and Debris?

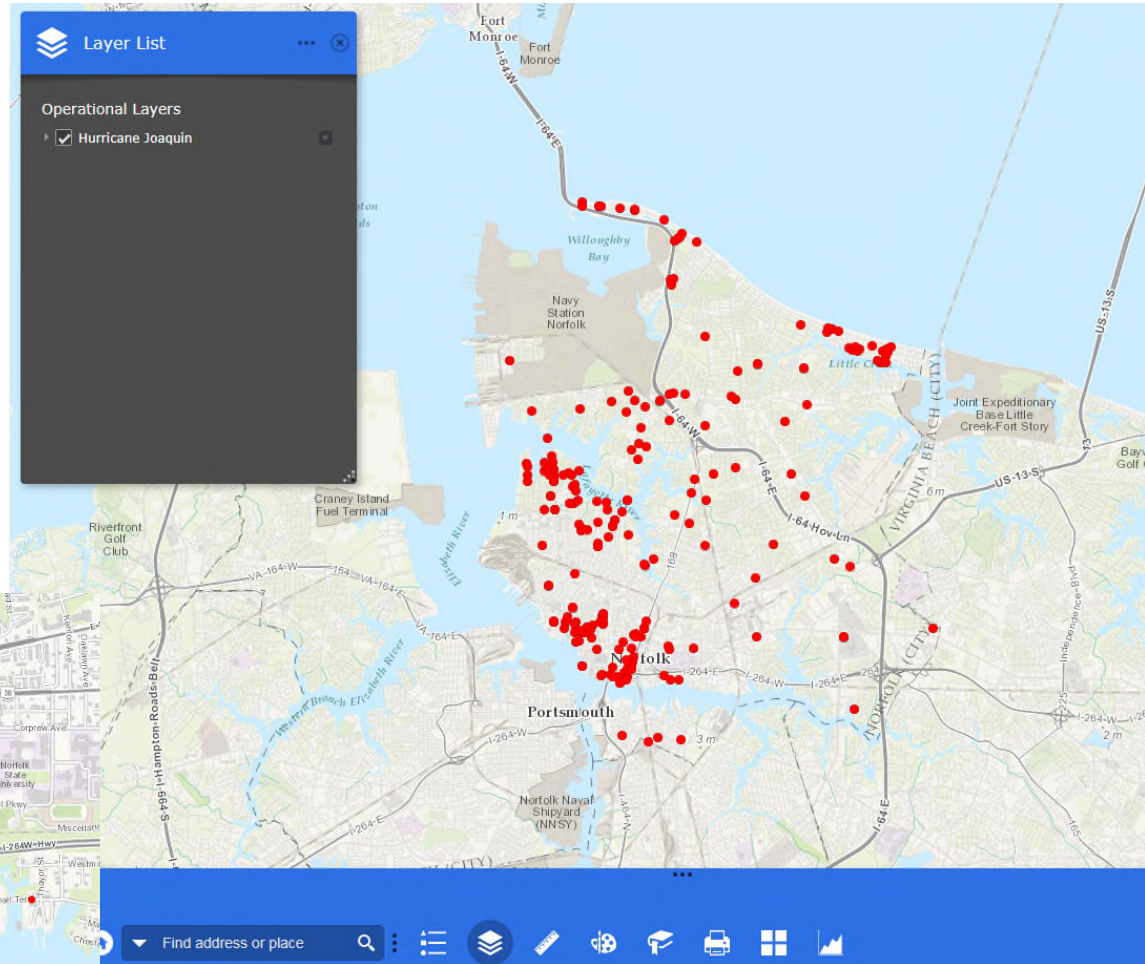
# 757-664-6510



# iView Analytics

11,412 Visits to the site

Date	Visits
10/1/2015	93
10/2/2015	3,484
10/3/2015	1,976
10/4/2015	2,272
10/5/2015	3,587



# Web / Social Media Analytics



Norfolk.gov =  
52,367 Page Views!

@NorfolkVA



Followers on 9/10 = 8792

Followers on 10/6 = 8965


City of Norfolk Government



"Likes" 9/30 = 6946



"Likes" 10/6 = 7298

	City of Norfolk, VA @NorfolkVA - Oct 2 <b>#norfolkVA</b> Don't let this be you! DO NOT drive through flood waters. It can be expensive & dangerous!! <a href="https://pic.twitter.com/yQWMV6d0Mn">pic.twitter.com/yQWMV6d0Mn</a> View Tweet activity	4,113	253	6.2%	Promote
	City of Norfolk, VA @NorfolkVA - Oct 2 <b>#norfolkVA</b> City Treasurer & Commissioner of Revenue offices will be closing at noon today. View Tweet activity	4,022	38	0.9%	Promote
	City of Norfolk, VA @NorfolkVA - Oct 4 <b>#norfolkVA</b> Due to weather/tides City offices & indoor pools will open at 9:30am tomorrow. Rec centers & libraries will open at normal hrs. View Tweet activity	3,730	57	1.5%	Promote
	City of Norfolk, VA @NorfolkVA - Oct 2 All <b>#norfolkVA</b> Courts will be closing at noon today. This includes Circuit, General District & Juvenile & Domestic Relations Courts View Tweet activity	3,548	30	0.8%	Promote
	City of Norfolk, VA @NorfolkVA - Oct 1 <b>#norfolkVA</b> Parking Garage updates: The following parking garages will be made available for residents to relocate... <a href="https://fb.me/26rjk1sZo">fb.me/26rjk1sZo</a> View Tweet activity	2,704	77	2.8%	Promote
	City of Norfolk, VA @NorfolkVA - Oct 4 <b>#norfolkVA</b> Public schools will be closed tomorrow, Mon, Oct 5 due to weather and predicted high tides. <a href="https://fb.me/NE2szdvC">fb.me/NE2szdvC</a> View Tweet activity	1,875	140	7.5%	Promote
	City of Norfolk, VA @NorfolkVA - Sep 30 <b>#norfolkVA</b> Mayor Fraim has declared a state of emergency at 5:04pm in accordance with Governor McAuliffe's state declaration. View Tweet activity	1,458	40	2.7%	Promote







# Resource Requests

High Water Vehicles /  
Rescue Teams



## Community Assistance

American Red Cross  
– Clean-Up Kits

Relief for Norfolk flood victims



# Impacts?

## National Guard Fly-Over

## Beach Erosion

*Topographic surveys being done to determine extent of damage  
Findings used to assess need for interim sand nourishment project  
& to discuss with Corps of Engineering how recent erosion impacts  
their planned renourishment project.*

Minimal Local Damage  
Threshold for Norfolk Exceeds \$800,000



# Thank You!

**Jim Redick, MPA, CEM**  
**Director, Emergency Preparedness &  
Response**  
**441-5600**  
**[James.Redick@norfolk.gov](mailto:James.Redick@norfolk.gov)**





# Hurricane Joaquin / Nor'easter

*Norfolk has invested over \$20 million over the last 30 years in shoreline protection measures*

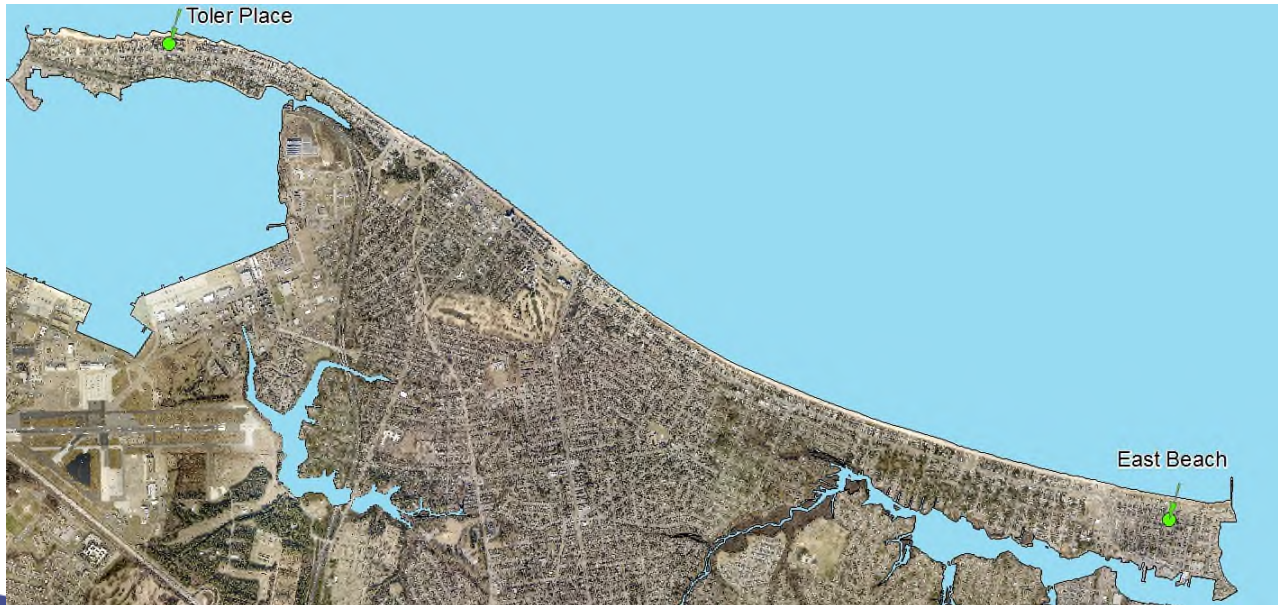
*Measures include beach nourishment, dune plantings, surveys, and 36 offshore breakwater structures*

*Shoreline protection measures functioned largely as planned, avoiding major damage to property*

*There was significant beach erosion from Little Creek Inlet to Willoughby*

**East Beach** – major dune erosion, but still a robust dune system in place

**Toler Place** (Between 11<sup>th</sup> View St & 12<sup>th</sup> View St) – residences may be vulnerable to future storm damage, minor damage to 11<sup>th</sup> View St dune walkover



# Bay Breeze Point & East Beach - Bay Point Dr

Looking East at Jetty



10/01/2015 PM



10/06/2015 AM

# Bay Breeze Point & East Beach - Bay Point Dr

Just west of Bay Point Walkover



10/01/2015 PM



10/06/2015 AM



# Toler Place

Between 11<sup>th</sup> View St and 12<sup>th</sup> View



10/01/2015 PM



10/06/2015 AM

# Hurricane Joaquin / Nor'easter

## Public Works Response

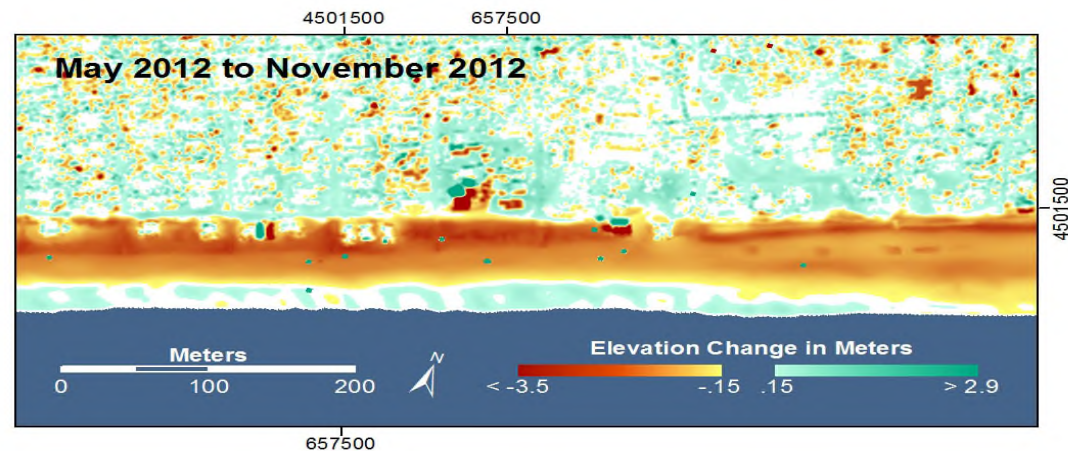
- Documented conditions before and after the storm with photos at various locations
- Conducted post-storm condition visual assessment
- Initiated annual fall beach topographic survey (currently underway, data available in 2 to 3 weeks)
- Performing additional surveying in East Beach & along Toler Place in case truck hauling operations are warranted
- Working with Army Corps of Engineers on various options, Engineered Beach approved but not yet constructed
- Conducted helicopter LIDAR survey and aerial photography (data available in approximately 2 weeks)



# LIDAR – Light Detection and Ranging



- New technology similar to RADAR
- Uses light waves (laser) instead of radio waves
- Uses aircraft, GPS satellites, and a base station
- Provides high-quality topographic survey (above water)
- Limited accuracy in tidal zone (below water)
- Extremely fast and economical





# Past Storm Responses -

- **Hurricane Isabel** (September 2003) - \$210,000 in FEMA funds for dune restoration (\$60,000 pre-storm with local funds, sand hauling August 2004)
- **Nor'easter** (September 2009) - \$44,000 in FEMA funds for dune restoration (Sand hauling April 2010)
- **Hurricane Irene** (September 2011) - \$500,000 in FEMA funds for Lamberts Point Landfill Repairs (Constructed October 2012)

# Hurricane Joaquin / Nor'easter Response

- Exploring truck hauling operations to be constructed using CIP funding
  - Target date December 2015
  - Corps of Engineers beach nourishment project, advertising October 2015, mobilization March 2016
- Working to include nourishment of vulnerable areas first in Corps of Engineers project spec
- Exploring 84-99 Program options with Corps of Engineers
  - Willoughby and Ocean View are “engineered beaches” but have not yet been constructed

# **Thank You!**

**David Ricks, PE**  
**Director, Department of Public Works**  
**664-4614**  
**[David.Ricks@norfolk.gov](mailto:David.Ricks@norfolk.gov)**

